

**APPENDIX H**  
**MOUNTAIN CONSTRUCTION SERVICES TREATMENT TANK INSPECTION REPORT**



# Mountain Construction Services

Division of MCS Environmental, Inc.

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September 24, 2001

Poles Incorporated  
Reid Tinling  
P.O. Box 12416  
Scottsdale, AZ. 85267

Project: Treatment Tank

Dear Mr. Tinling,

The enclosed report details Shear Wave Ultrasound, Digital Thickness Ultrasound and Magnetic Particle inspection results of the Treatment Tank. A Parker Contour Probe MD# DA 400, S/N 6449 with red iron oxide as the inspection medium, a Krautkramer Branson Ultrasound machine MD# USN52R, S/N 0070Y4 and a Stresstel Digital Thickness Ultrasound machine, Model T-Scope DL, S/N 500625 were used for these inspection procedures.

Testing Method:                      AWS D1.1, Magnetic Particle  
   AWS D1.1, Ultrasound

Acceptance Standard:              AWS D1.1

It has been our pleasure providing these services to you. If you have any questions, or if we can be of any further assistance, please feel free to contact me at (509) 924-9236.

Sincerely



Everett Drader  
NDT Manager  
Mountain Construction Services

enclosures: Magnetic Particle, Shear Wave Ultrasound & Digital Thickness Ultrasound Inspection Report

Job Ref. # 1053-001.01

## Magnetic Particle Inspection List of Indications

September 19, 2001

- Center floor weld – Approximately 6' from east end of tank, intermittent cracks at toe of floor weld for an approximate area of 22". Crack lengths are approximately 1.25", 1", 1.25", 1.5" 1", ½" and 1.25". The 4 largest cracks were found to penetrate through the skin of tank to the exterior surface using Shear Wave Ultrasound inspection.
- Center floor weld – Approximately 12' from east end of tank, an area approximately 2" long was found at the toe of the floor weld with intermittent surface cracks. These intermittent cracks were found to not penetrate through the skin of the tank to the exterior surface using Shear Wave Ultrasound inspection.
- Center floor weld – Approximately 13' from east end of tank, an area approximately 4" long was found at the toe of the floor weld with intermittent surface cracks. These intermittent cracks were found to not penetrate through the skin of the tank to the exterior surface using Shear Wave Ultrasound inspection.
- Southwest corner of tank – Floor weld running from base of south wall to center floor weld, crack was found at south end of weld at bottom of south wall. Crack was approximately 1.25" long. Crack was found to penetrate through the skin of tank to the exterior surface, but only at the south end of the crack, an area approximately 1/16" to 1/8" in length, using Shear Wave Ultrasound inspection.

September 20, 2001

- West wall - Crack on vertical center wall weld approximately 8' up from floor at toe of weld. Crack was approximately 1.5" long and was found to penetrate through the skin of the tank to the exterior surface, but only at the center of the crack for an area approximately 1/16" to 1/8" in length, using Shear Wave Ultrasound inspection.
- Circulation pipe penetration welds – Numerous surface cracks found on all 3 penetration welds, ranging in length from approximately 1/8" to 1.5" long. Minimal depth was found on all cracks using Shear Wave Ultrasound inspection.
- Outside upper corners of old heating coil recesses – 6 surface cracks found in individual separate corners. Cracks ranging in length from approximately ¼" to ½". Minimal depth on all 6 cracks.

September 23, 2001

- Inspection of all repaired floor welds – All old floor welds, full length and width of the treatment tank, had been removed and completely replaced with new welds. MCS inspected all the new floor welds and **No Relevant Indications were Noted.**
- West wall – The crack on the west wall center vertical weld had been removed and the area had been repaired with new weld. MCS inspected the new weld and **No Relevant Indications were Noted.**
- Circulation pipe penetration welds – All cracks around the circulation pipe penetrations had been removed and replaced with new welds. MCS inspected the new welds and **No Relevant Indications were Noted.**
- Outside upper corners of old heating coil recesses – All surface cracks had been repaired and were incorporated directly into new sealing welds above old heating coil recesses.
- New horizontal sealing welds above and at inside upper corners of old heating coil recesses – These areas were welded at the determination of Poles, Inc. as a future preventative maintenance measure. These new welds were not inspected by MCS.

### **Shear Wave Ultrasound Inspection All horizontal wall welds**

MCS was retained to inspect all welds for indications of **relevant indications** (indications open to the surface of the welds).

Shear Wave Ultrasound inspection of all horizontal wall welds found 10 areas of **intermittent non relevant indications**. These areas were not open to either the interior or exterior surface of the tank, were not continuous and were determined most likely to have occurred at the time of manufacturing of the tank. These areas ranged in length from approximately 1" to 9".

Poles Inc., after consulting with MCS and Knight Construction, made the determination to not remove these areas.

### **Digital Thickness Ultrasound Inspection**

Digital Thickness Ultrasound inspection was performed on all walls and floor of the treatment tank. Please see the following pages for specific wall and floor inspection information.

### Digital Thickness - East Wall (inches)

12 locations - 3' x 4' pattern beginning in the upper right corner (A) and ending at the lower left corner

Letters denote width and numbers denote height of wall

	A	B	C
1	0.423	0.424	0.413
2	0.427	0.418	0.412
3	0.459	0.454	0.420
4	0.418	0.410	0.388

### Digital Thickness - West Wall (inches)

12 locations - 3' x 4' pattern beginning in the upper left corner and ending at the lower right corner

Letters denote width and numbers denote height of wall

	A	B	C
1	0.426	0.423	0.451
2	0.420	0.400	0.400
3	0.426	0.402	0.413
4	0.423	0.402	0.424



**Digital Thickness - North Wall (inches)**

**80 locations - 3' x 5' pattern beginning at upper left corner and ending at the  
lower right corner**

**Letters denote height and numbers denote length of wall**

	A	B	C	D
1	0.442	0.420	0.400	0.430
2	0.448	0.423	0.453	0.437
3	0.444	0.428	0.454	0.428
4	0.442	0.426	0.427	0.443
5	0.434	0.436	0.430	0.430
6	0.399	0.378	0.392	0.377
7	0.469	0.429	0.462	0.445
8	0.480	0.424	0.465	0.437
9	0.472	0.423	0.422	0.443
10	0.466	0.441	0.418	0.427
11	0.384	0.380	0.372	0.373
12	0.443	0.423	0.438	0.445
13	0.443	0.392	0.468	0.447
14	0.448	0.436	0.427	0.449
15	0.445	0.427	0.440	0.467
16	0.396	0.377	0.386	0.386
17	0.462	0.423	0.423	0.441
18	0.439	0.435	0.427	0.441
19	0.437	0.424	0.401	0.432
20	0.436	0.427	0.453	0.443

**Digital Thickness - South Wall (inches)**

**80 locations - 3' x 5' pattern beginning at upper right corner (A) and ending at lower left corner**

**Letters denote height and numbers denote length of wall**

	A	B	C	D
1	0.441	0.422	0.420	0.444
2	0.479	0.423	0.419	0.448
3	0.444	0.427	0.427	0.443
4	0.474	0.422	0.420	0.443
5	0.446	0.433	0.425	0.431
6	0.440	0.403	0.449	0.467
7	0.444	0.400	0.438	0.462
8	0.447	0.405	0.432	0.453
9	0.447	0.401	0.434	0.452
10	0.385	0.370	0.374	0.382
11	0.436	0.430	0.461	0.445
12	0.439	0.417	0.427	0.442
13	0.436	0.424	0.421	0.444
14	0.436	0.418	0.417	0.437
15	0.385	0.374	0.384	0.381
16	0.444	0.416	0.426	0.448
17	0.451	0.407	0.428	0.440
18	0.459	0.405	0.434	0.453
19	0.454	0.400	0.461	0.463
20	0.480	0.402	0.426	0.474



### Digital Thickness - Floor

60 locations - 3' x 5' pattern beginning at the southwest corner and ending at the northeast corner

Letters denote width and numbers denote length of tank

	A	B	C
1	0.433	0.421	0.428
2	0.444	0.425	0.422
3	0.442	0.414	0.448
4	0.444	0.431	0.446
5	0.443	0.433	0.453
6	0.442	0.444	0.438
7	0.444	0.432	0.449
8	0.448	0.431	0.445
9	0.437	0.435	0.444
10	0.427	0.425	0.446
11	0.438	0.424	0.430
12	0.446	0.426	0.441
13	0.439	0.437	0.434
14	0.441	0.429	0.447
15	0.437	0.440	0.439
16	0.430	0.426	0.434
17	0.447	0.422	0.428
18	0.426	0.421	0.430
19	0.427	0.418	0.429
20	0.425	0.421	0.417